

PATENT ABSTRACTS OF JAPAN

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(54) WOVEN FABRIC AND METHOD FOR PRODUCING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a woven fabric having all the excellent thinness, lightness, low air permeability and high tear strength and suitably usable in especially ticking covers of down jackets and to provide a method for producing the woven fabric.

SOLUTION: The woven fabric has 10-50 N both of tear strength in the warp cutting direction and tear strength in the weft cutting direction by a pendulum method, ≤ 0.07 mm thickness, ≤ 50 g/m² weight and ≤ 1.5 cm³/cm²/s air permeability. The method for producing the woven fabric without being subjected to either a resin finishing or double-side calender processing is provided.

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CLAIMS

[Claim(s)]

[Claim 1]

both [by the pendulum method] tear strength of a warp cutting direction, and tear strength of a woof cutting direction -- although -- textiles, wherein it is 10-50N, and a superintendent officer is below 50 g/m² and permeability is below 1.5-cm³/cm², and s.

[Claim 2]

The textiles according to claim 1, wherein flexural rigidity by KES is below 0.025 gf-cm²/cm.

[Claim 3]

The textiles according to claim 1 or 2, wherein thickness is 0.07 mm or less.

[Claim 4]

The textiles according to any one of claims 1 to 3, wherein cover factors are 1600-2000.

[Claim 5]

The textiles according to any one of claims 1 to 4, wherein ratios of warp density to woof density are 0.9-1.2.

[Claim 6]

The textiles according to any one of claims 1 to 5 which line-of-thread fineness is 30 decitex or less, and are characterized by single yarn fineness using polyamide multifilaments of 1.2 decitex or less.

[Claim 7]

The textiles according to any one of claims 1 to 6 in which ***** is characterized by being a lip stop organization which is 1.5 mm or less.

[Claim 8]

A manufacturing method of the textiles according to any one of claims 1 to 7 performing neither resinating nor double-sided calendering.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention is thin, light, and about textiles excellent in tear strength, is the textiles which controlled especially blow off of cotton and a down, and relates to the textiles used suitably for especially a down jacket etc.

[0002]

[Description of the Prior Art]

Since the cloth which controlled blow off of cotton and the down which are used for outerwear or a bedding side fabric was conventionally excellent in the aesthetic property and amenity, silk and cotton were used. However, since tear strength is low inferior to endurance, the cloth which consists of natural fibers has the problem of being easy to generate blow off of cotton and a down from an elbow or a sleeve portion, when using especially as outerwear.

[0003]

On the other hand, since the mechanical characteristic is excellent, many polyester multifilament, nylon multifilaments, and those compound synthetic fiber textiles have also been used. Many these synthetic fiber textiles in a coat, a blouson, golf, outdoor wear, etc. are especially used from software, a light weight, saposhnikovia root nature, high water repellence, high robustness, etc. For example, in order to obtain the textiles which need tear strength, the method of to raise the intensity of a polyamide filament being tried (for example, refer to patent documents 1.), it raising draw magnification, and obtaining the polyamide filament of high intensity is indicated. However, as for such thread, the intensity at the time of 10% extension becomes high, ductility becomes low conversely, and the aesthetic property of textiles becomes hard. Since the thread number which receives ***** will decrease in the process in which textiles are torn and it will become easy to concentrate the stress per thread if ductility becomes low, tear strength becomes low conversely and is not preferred. In order to heighten the tear strength of textiles, when the line of thread of thick fineness is used, textiles are thick, and aesthetic property becomes hard and becomes unsuitable for

the use which needs to be stored in compacts, such as tentorium, a paraglider, and a parachute.

[0004]

Devote oneself, even if it is textiles which use a synthetic fiber, and the relation of a number to woof tear strength becomes low relatively, In order to carry out woof tear strength more than 10N, the placing number of the warp per 2.54 cm or the woof must be set up few, For example, when it was a 33-decitem nylon filament, total of warp and the woof had to be set up or less in 280 [2.54 cm] (for example, refer to patent documents 2.). In order to lower permeability, the textiles of a plain-weave organization have been developed conventionally. However, if those things were not made into the fineness of 44 decitem or more, they could not obtain sufficient tear strength, but there was nothing that is satisfied with an advanced level of lightness, low permeability, and any of high tear strength.

[0005]

[Patent documents 1]

JP,11-247022,A (claim 1 etc.)

[Patent documents 2]

JP,2003-55859,A (example 1 etc.)

[0006]

[Problem(s) to be Solved by the Invention]

This invention solves the problem of said conventional technology, and is excellent in lightness, low permeability, and all of high tear strength, and an object of this invention is to provide the textiles which can be used conveniently for especially the side fabric of a down jacket, and its manufacturing method.

[0007]

[Means for Solving the Problem]

This inventions reached this invention, as a result of inquiring wholeheartedly, in order to solve an aforementioned problem. That is, this invention consists of the following composition.

1. both [by the pendulum method] tear strength of a warp cutting direction, and tear strength of a woof cutting direction -- although -- textiles, wherein it is 10-50N, and a superintendent officer is below 100 g/m^2 and permeability is below $1.5\text{-cm}^3/\text{cm}^2$, and s.
2. Textiles given in the above 1st, wherein flexural rigidity by KES is $0.025 \text{ gf-cm}^2/\text{cm}$.
3. Textiles the above 1st, wherein thickness is 0.07 mm or less, or given in the 2nd.
4. Textiles given in the 3rd either from the above 1st, wherein cover factors are 1600-2000.
5. Textiles given in the 4th either from the above 1st, wherein ratios of warp density to woof density are 0.9-1.2.
6. Textiles given in the 5th either from the above 1st which line-of-thread fineness is 30 decitem or less, and is characterized by single yarn fineness using polyamide multifilaments of 1.2 decitem or less.

Textiles given in the 6th either from the above 1st to which 7. is characterized for the circumstances by being a lip stop organization in which it is 1.5 mm or less.

8. Manufacturing method of textiles given in the 7th either from the above 1st performing neither

resinating nor double-sided calendering.

[0008]

This invention is explained in detail below.

As for textiles of this invention, it is preferred that tear strength of a warp cutting direction by the pendulum method and/or a woof cutting direction is 10-50N. Since it is necessary to enlarge fineness in order for tear strength of textiles to serve as insufficient feeling easily depending on a use and to exceed 50N, and cloth is thick and will become hard easily in connection with it, it is not desirable less than [10N]. 12-40 Ns of circumstances are 14-30N still more preferably more preferably.

[0009]

As for permeability of textiles of this invention, it is preferred that it is below $1.5\text{-cm}^3/\text{cm}^2$, and s, and below $1.0\text{-cm}^3/\text{cm}^2$, and s are below $0.80\text{-cm}^3/\text{cm}^2$, and s still more preferably more preferably.

Textiles are used as a side fabric and the final-stage cotton of the use of down wear, a down jacket, a sleeping-bag, etc. is carried out. Therefore, since bristle type final-stage cotton which has a comparatively smaller thin feather or a fiber diameter, and little crimp, and a staple will become easy to cause fault which jumps out of the inside if permeability of textiles exceeds $1\text{-cm}^3/\text{cm}^2$, and s, it is not desirable. Although the smaller one of permeability is good, it is usually more than $0.1\text{-cm}^3/\text{cm}^2$, and s.

[0010]

As for a superintendent officer of textiles of this invention, it is desirable still more preferred that it is below 50 g/m^2 , and below 45 g/m^2 is below 40 g/m^2 much more preferably. If a superintendent officer of textiles exceeds 50 g/m^2 , it will become difficult to use it for a use asked for a thin ground. However, since tear strength may be insufficient if a superintendent officer is too small, it is preferred that it is more than 10 g/m^2 .

[0011]

As for textiles used for this invention, it is preferred that they are polyamide multifilaments.

Polyamide multifilaments are synthetic polymers which have an amide bond, It is textiles excellent in high strength, high toughness, abrasion resistance, and dimensional stability, and is suitable for sport garments uses, such as materials uses, such as a sleeping-bag, tentorium, a paraglider, and a parachute, or skiing snowboard wear, and outdoor wear. In order to target a compact and soft thin ground textiles use like a side fabric especially mainly for down wear in this invention and to satisfy lightness and tear strength to a high level, Furthermore, a nylon multifilament, especially multifilament of nylon 6 or Nylon 66 are suitably used also from a viewpoint of cost.

[0012]

Polyamide which constitutes polyamide multifilaments may be a copolymer and a mixture which make them a subject. In order to improve hygroscopicity, copolymerization of the hygroscopic monomer may be carried out. In a multifilament silk manufacture stage, it is good also as sheath-core type compound polyamide multifilaments which confined hygroscopic resin in a core part.

[0013]

It is not limited by sectional shape in particular of a filament which constitutes textiles of this invention, but A round shape, A thing like a special variant section throat besides a diversification type, a many leaf type, a hollow type, a cross-joint type, and a flat type is also applicable, Although you may be an aggregate of a different section and in particular the degree of anomaly or hollow rate are not limited, since too strong a glossy sense is not liked in many cases, especially its round section that does not produce sense of incongruity easily in a glossy sense is preferred. With especially a flattened section, it is suitably used from the ability of permeability to be lowered. It may be what is called thick-and-thin yarn that has unevenness of thickness in the direction of a fiber axis.

[0014]

a filament which constitutes textiles of this invention -- a hygroscopic substance, an antioxidant, a delustering agent, an ultraviolet ray absorbent, an antimicrobial agent, etc. -- independent, it compounds and may be added. There is no limitation in particular about the characteristics other than the strong ductility characteristic of textiles, for example, priming contraction, heat stress, a double refraction factor, thickness spots, etc. Crimp processing of false twisting etc. may be performed, and textiles may differ in contraction, or may be commingled yarn with a filament which differs in sectional shape, and compound thread.

[0015]

As for relative viscosity of textiles used by this invention, it is desirable that it is 3.2 or more. It is easy to produce a problem of aggravation of processing operability by product **** according that relative viscosity is less than 3.2 to a shortage of breaking strength, a bursting strength fall, and shortage of a breaking extension degree, and aggravation of product durability. In this case, even if it adjusts strong ductility balance, textiles with low relative viscosity have many molecular chain terminals so that lowness of that molecular weight may mean, So, since associative strength of disorder and the direction of a fiber axis of a chain is relatively low, fracture strong ductility (toughness) becomes low, and it becomes easy to generate a fluff and thread breakage under high tension and high friction. If relative viscosity exceeds 4.5, a thing high as toughness will be obtained, but it is easy to produce a problem of productivity falling remarkably by carrying out increased viscosity, raw thread cost going up, and it becoming impossible for a polymerization facility and spinning equipment corresponding to hyperviscosity to to be not only needed, but to supply a cheap and highly efficient product to consumers. Relative viscosity is 4.5 or less [3.3 or more] preferably, and is 4.0 or less [3.5 or more] still more preferably.

[0016]

Although there is no limitation in particular about a silk manufacture method of these polyamide multifilaments, It can manufacture by carrying out at two processes using a spinning extension interlocking device by a spin draw method or a spinning device, and a stretching device, As for spinning taking over godet roller peripheral speed, in the case of a spin draw method, the amount of 1500-4000-m/is desirable, It is preferred for spinning to be preferably carried out in the range for 2000-3000m/, and for flipping continuation extension to be carried out and to be adjusted by breaking

strength of 4.5 or more cN/dtex and 45 to 55% of the degree of breaking extension.

[0017]

It is desirable for intensity at the time of the 10% extension of textiles used by this invention to be 1.5 - 2.5 cN/dtex. It is greatly influenced by tension fluctuation at the time of weaving that intensity at the time of 10% extension is less than 1.5 cN/dtex, and uneven-ization of contraction accompanying uneven dimensional stability and it takes place. Therefore, since a problem that the dimensional stability of a product becomes unstable and product loss increases arises, it is not desirable. Since it becomes easy to generate a problem that aesthetic property of textiles will become hard when weaving is carried out especially with high density [when larger than 2.5 cN/dtex], it is not desirable.

[0018]

As for ductility of this polyamide filament, it is desirable that they are 45% - 55%. Since tear strength becomes low that it is easy to concentrate on one thread with which stress is going to be torn when textiles are torn as ductility is less than 45%, it is not desirable. If a tensile elongation rate of a fabric constitution line of thread is high, not only in one thread with which stress is going to be torn when textiles are torn, When thread is extended, stress which stress is applied to thread which is going to be torn by the next, thread which is going to be torn by the next, and much thread, and is applied to one thread as a result reduces, and it is thought that tear strength improves. Furthermore raw thread cannot be followed at frictional resistance or a tension change accompanying improvement in the speed, densification, and reduction in fineness of weaving with several kinds of *****, but it is easy to generate a problem which occurrence frequency of thread breakage increases. Since it is easy to generate a problem that tear strength when breaking strength becomes low and makes it textiles declines even if it will adjust various spinning extension conditions, if it becomes larger than 55%, it is not desirable. As a more desirable range, it is 47 to 53%.

[0019]

It is preferred that the flexural rigidity of textiles of this invention is below $0.025 \text{ gf-cm}^2/\text{cm}$ ($1\text{gf}=0.0098\text{N}$). This invention persons found out that it was a factor in which it is very important when that textiles are soft if it puts in another way with the low flexural rigidity of textiles satisfies simultaneously lightness, tear strength, and permeability which are the purposes of this invention. In order to raise tear strength with textiles etc. conventionally, usually action which makes single yarn fineness thick was taken. In the case of textiles, if single yarn fineness is made thin, breaking strength of raw thread not only becomes low, but a touch area of warp and the woof will increase and friction of warp and the woof will increase in connection with it. it is therefore, like [constraint points do not move and] especially the single tongue method -- it will tear, and, sometimes, will be cut for every one line of thread, and tear strength will become low. A jam which narrows a touch area of constraint points of warp and the woof in order to prevent it enlarged single yarn fineness, in order to make friction in constraint points low, or it aimed at same effect by improving a slide of warp and the woof in many cases. However, this was the measure for which it was suitable when [like the single tongue method] it tore over a long time comparatively slowly and stress was applied. For example, it had with a main part of a bag, and in sewing portions with a hand belt body, a sewing part and since [its]

it tore [immediately] over a long time in the next non-sewing parts comparatively slowly and stress was applied, measurement by the single tongue method was suitable.

[0020]

However, in a textile suitably used as a side fabric for a down like this invention on the other hand, when [like the single tongue method] stress is applied gradually, it is more common for momentary stress to act few rather. For example, during take-off run, when used as sportswear, such as skiing, when it falls over, a side fabric is caught in something and may be torn. Measurement according [momentary stress applied at this time] to the pendulum method is suitable. Conventionally, that out of which a high numerical value had come by the single tongue method is checking that it is not that out of which a high numerical value comes also in the pendulum method, when this invention persons advance examination. Even if it became a high numerical value by the single tongue method when single yarn fineness was thick as a result of examining the portion in detail, by the pendulum method, a tendency used as a numerical value lower than what has thin single yarn fineness was seen. Probably textiles could not slide on this easily in constraint points to momentary stress, and it thinks that it is for the difference not to appear. While advancing investigation furthermore, the pendulum method and correlation had just high bending softness of a textile, and it turned out that it is considered as a means which makes a textile soft, and giving neither resinating nor a double-sided calendar also besides making single yarn fineness thin affects it greatly. Although the reason is not clear, when shearing stress is perpendicularly applied to a cloth surface, if it bends and is hard, to the direction of a fiber axis, shearing force will be applied in the vertical direction as it is, and will become easy to cut, and. I bent and think that it is because it will be easy to turn at textiles cut momentarily and shearing stress will be distributed in the vertical direction to the direction of a fiber axis, and the direction of a fiber axis if soft. As a range of much more desirable flexural rigidity, it is below $0.020 \text{ gf-cm}^2/\text{cm}$, and a much more desirable range is below $0.015 \text{ gf-cm}^2/\text{cm}$.

[0021]

As for thickness of textiles of this invention, it is preferred that it is 0.07 mm or less. It becomes difficult to use it for a use which aesthetic property will become easily hard if thickness of textiles exceeds 0.07 mm, and is asked for a thin ground. As a still more desirable range, it is 0.068 mm or less.

[0022]

As for textiles of this invention, it is preferred that cover factors (CF) of textiles shown with a following formula are 1600-2000. $CF = T \times (DT)^{1/2} + W \times (DW)^{1/2}$ [among a formula, textiles pass through T, density (a book /2.54cm) and W show latitude density (a book /2.54cm) of textiles, and DT and DW express thickness (deci textile) of warp which constitutes textiles, and the woof]. If it becomes a thin light thing with less than 1600, but it is hard to become what can satisfy permeability and 2000 is exceeded on the other hand, although it becomes what is satisfied, since textiles become heavy easily, permeability is not preferred. As a more desirable range, it is 1700-1900.

[0023]

As for textiles of this invention, it is preferred that ratios which did division of the warp density by woof

density are 0.9-1.2. Since a number which can drive in the woof has a limit, in order for this value to use less than 0.9, it must lessen a warp number. In that case, that is, since it is hard to become a value which permeability satisfies when this value is less than 0.9, it is not desirable. When this value exceeds 1.2, it is because what tear strength is satisfied with textiles with it in which distance of constraint points in the woof becomes short too much of is hard to be obtained. [thin] As a more desirable range, it is 0.95-1.1.

[0024]

It is preferred that line-of-thread fineness used for textiles of this invention is 30 decitex or less, and single yarn fineness is 1.2 decitex or less. It is because it will be hard to become what tear strength falls and it is not only hard to satisfy permeability, but is satisfied if single yarn fineness exceeds 1.2 decitex undesirably, since textiles will become heavy easily if line-of-thread fineness exceeds 30 decitex. As a more desirable range, line-of-thread fineness is 25 decitex or less, and single yarn fineness is 1.1 decitex or less.

[0025]

Textiles of this invention are targeting a compact and soft thin ground textiles use mainly like a side fabric for down wear, In order to satisfy lightness and tear strength to a high level, **** of textiles has preferred lip stop **** which put most common organizations of ***** or *****, and grain and the nanaco **** together. Especially, in order to consider it as textiles with large tear strength, it is preferred to consider it as a lip stop organization, and even if grain in lip stop **** and the nanaco part are two or more, they are not cared about. Generally it is constituted within the limits of two to five, a double-lips stop is also available, and there is no fine limitation of a lip stop organization in this invention. However, since a tear strength improved effect as the whole textiles will become scarce easily if a size of a lattice design is too large in lip stop ****, it is preferably desirable a lattice design of 5 mm or less and to carry out a textile design so that it may become a lattice design of 1.5 mm or less still more preferably. It is useful for large improvement in tear strength to make it a lip stop organization of such fine size, and moreover, by a lattice design of 5 mm or less, since permeability seldom changes even if it changes a lattice spacing, it is adopted especially preferably.

Although two or more are subtracted, and it arranges and usually being constituted into a lattice portion of a lip stop, what inserts one line of thread of larger fineness than a line of thread of a plain weave portion, and is made into a lattice design is made into a kind of a lip stop organization in this invention. In this case, single yarn fineness can be made thick compared with a line of thread of a plain weave portion, or it can also be made thin. A much more desirable range is 0.8 mm or less.

[0026]

As a manufacturing method of textiles in this invention, it is preferred to perform neither resinating nor double-sided calendering. When textiles of low permeability conventional thin ground type were manufactured, resinating and/or double-sided calendering had been performed. However, when resinating, and a down and a feather became being easy to come out from the portion that aesthetic property becomes hard or crease JIWA tends to be made or long term use was carried out, there was a problem that resin begins to separate. Since gloss of a fabric surface sticks out too far when a

double-sided calendar is given, it is not desirable. If it was an one side calendar, when giving the back side and it is considered as goods, since it is lost, most things become a problem by gloss can be adopted preferably. Since it tears by carrying out a double-sided calendar and strength declines easily, it is not desirable. Even when a double-sided calendar is given, double-sided calendar conditions are changed, and when only the same operation as a real one side calendar has been carried out, when using a rear face as an elevated-temperature calendar and using the surface as a low-temperature calendar, it can be judged as a real one side calendar, for example. As a range of a desirable degree of brilliancy of at least one side, it is 3.0 or less, and further 2.6 or less are much more preferred.

[0027]

[Example]

Hereafter, this invention is explained based on an example. The valuation method used by this invention is as follows.

[0028]

(Relative viscosity)

A sample is dissolved, a sample solution is adjusted so that polymer concentration may come [ml] in 10mg /into 96.3 **0.1-% of the weight special grade chemical concentrated sulfuric acid, and a solution phase versus viscosity is measured using the Ostwald viscometer for the number 6 to 7 seconds of the bottom seconds of Mizuochi at 20 ** the temperature of **0.05 **. Relative viscosity RV is computed using the following formula from the ratio of the same falling time T0 (second) of 20 ml of sulfuric acid as the time of adjusting a sample solution when measuring using the same viscosity meter to the falling time T1 (second) of 20 ml of sample solutions.

$RV=T1/T0$

[0029]

(At the time of breaking extension degree:DE(%):10% extension breaking strength DT (cN/dtex), stress)

Instron Japan, Inc. It measures using 4310 types. Add 1/33 g to line-of-thread fineness (dtex) as preliminary tension, and Itonaga 20cm, A S-S chart is created under the conditions of speed-of-testing 20 cm/min, it measures by n= 3 to one sample, stress is read from a chart at the time of the degree of breaking extension, breaking strength, and 10% extension, each average value is calculated, and it ** and asks with fineness (dtex) about stress and breaking strength at the time of 10% extension.

[0030]

(Fineness (dtex))

Three KASE of the polyamide multifilaments of 100-m length was created, each weight (g) was measured, average value was calculated, and it increased 100 times.

[0031]

(Permeability)

Permeability specified to JIS-L-1096 8.27.1 (fragile form method)

It is based on the A method.

[0032]

(Thickness)

About the textiles in which film processing of coating, a lamination, etc. is not performed, five textile thickness (mm) is measured at random with a thickness meter, and calculates the average value.

About the textiles in which film processing was performed, a photograph of a section is taken using a scanning electron microscope, five intervals of the filament of textile both sides located most outside are measured at random, photograph magnification is converted, and the average value is calculated.

[0033]

(Flexural rigidity)

It bends KATO tech company make KES-FB2, and using a characteristic test machine, at least two specimens extract 20 cm x 20 cm crosswise, grasp a sample by the zipper of a 1-cm interval, and do the pure-bending examination of uniform curvature in curvature $K = -2.5 - +2.5$. Deformation velocity is 0.50 (1/cm/(second)).

In order to lessen influence of gravity, a sample is made vertical and measured.

However, the direction at which warp turns is made into **, make into ** the direction at which the woof turns, and let the average value be a flexural rigidity value. Measurement environment is set to 20 ** and 65%RH. Units are $\text{gf-cm}^2/\text{cm}$.

[0034]

(Degree of brilliancy)

Using digital deflection photometer UGV-5D by Suga Tester incorporated company, a light-receiving angle and an incidence angle are adjusted to 45 degrees, and let a value with a lower table and reverse side be a degree of brilliancy by the average value of both the degrees of brilliancy of the direction of warp, and a weft direction.

[0035]

(Superintendent officer)

It is based on the mass per unit area specified to JIS L 1096.

[0036]

(Tear strength)

It is based on the tear strength (the pendulum method) specified to JIS L 1096. The both directions of the direction which cuts warp, and the direction which cuts the woof are measured.

[0037]

(Example 1)

At the spinning temperature of 280 **, from the cap which has 20 round holes, carry out melt spinning of the nylon 6 polymer of relative viscosity $\eta_{\text{sp}}/c = 3.51$, and Spinning speed 2400 m/min, It extended at the extension temperature of 160 **, and the multifilament of 22-decitetex 20 filaments whose ductility the intensity at the time of 10% extension is 2.10 cN/dtex, and is 50% was obtained. This line of thread was used for warp and the woof, it was set as 183 warp densities/2.54 cm, and 178 woof densities/2.54 cm, and weaving was performed in the lip stop organization which shows drawing 1.

[0038]

After following the conventional method and refining and dyeing the obtained gray goods, calendering (conditions: a part for 20-m/in 120 ** of cylinder temperatures, pressure 25 kgf/cm², and speed) was performed twice to textile one side, and was finished, and the textile of 198 warp densities/2.54 cm, and 184 woof densities/2.54 cm was obtained. Latitudinal tear strength force passed through 18.6 Ns of obtained textiles, and 14.7kgf and the thickness were 0.066 mm in tearing strength. Aesthetic property is dramatically soft and was excellent in tear strength in spite of the thin ground where gloss was pressed down.

[0039]

(Example 2)

Example 1 was followed except having carried out weaving in the mini double-lips organization which shows drawing 2. Aesthetic property is dramatically soft and was excellent in tear strength in spite of the thin ground.

[0040]

(Comparative example 1)

Example 1 was followed except having performed double-sided calendering instead of one side calendering. Tear strength became low hard [slight / which performed double-sided calendering], and surface gloss became too high [that].

[0041]

(Comparative example 2)

The curing treatment for 1 minute was carried out instead of one side calendering for the following resin at 130 ** after **** coating using the metal plate of 50 microns of clearances. Para Kron AM-200 (acrylic resin by Neagari industrial company) 100 copy

Toluene Ten copies

PANRON LN (cross linking agent of acrylic resin by a Neagari industrial company) Two copies

The viscosity of resin was adjusted with various kinds of solvent concentration so that it might be set to 10000 cps (Brookfield viscometer rotor No.5, number of rotations of 20 ppm).

Resin coating tore and it became a powerful low thing.

[0042]

(Comparative example 3)

Example 1 was followed except having changed and carried out weaving of the weave density to Table 1 using the nylon 6 textiles of 44-decitex 34 filaments of a statement. The textile has become harder [using thick thread] with the heavy thing.

[0043]

(Comparative example 4)

Example 1 was followed except having carried out weaving in the lip organization which shows drawing 3 using the nylon 6 textiles of 33-decitex 24 filaments given in Table 1. Although it tore by having lowered and carried out weaving of the weave density and strength was satisfied, permeability was too high and became unsuitable for a down jacket.

[0044]

(Comparative example 5)

Example 1 was followed except having carried out weaving to Table 1 on condition of Table 1 using the Nylon 66 textiles of 10-decitetex seven filaments of a statement. Fineness tore to the sake too low and became a powerful low thing.

[0045]

[Table 1]

項目	単位	実施例1	実施例2	比較例1	比較例2	比較例3	比較例4	比較例5
経糸切断方向 引裂強度	N	18.6	17.7	8.8	11	18.2	14.5	8.7
緯糸切断方向 引裂強度	N	14.7	14.2	7.9	9	10.3	13.3	7.8
目付け	g/m ²	35.8	34.9	35.5	41	61.5	49	20.5
通気度	cm ³ /cm ² ・s	0.89	0.91	0.88	0.5以下	0.75	10.2	1.2
曲げ剛性	gf・cm ² /cm	0.010	0.011	0.009	0.033	0.027	0.024	0.007
厚み	mm	0.066	0.069	0.065	←	0.12	0.10	0.043
カバーファクター	←	1791	1782	1791	←	2242	1545	1572
密度比	←	1.08	1.07	1.08	←	1.84	1.17	1.08
糸条織度	dtex	22	22	22	←	44	33	10
単糸織度	dtex	1.1	1.1	1.1	←	1.3	1.4	←
ポリアミドポリマー	←	ナイロン6	←	←	←	←	←	ナイロン66
リップストップ	←	ミニミニリップ	ミニダブルリップ	ミニミニリップ	←	←	←	←
リップストップ幅	mm×mm	0.64×0.69	1.3×1.4	0.64×0.69	←	0.58×1.07	0.88×1.02	0.52×0.55
片面カレンダー	←	片面2回	←	両面カレンダー	片面樹脂	片面2回	←	←
光沢度(低い面)	←	2.5	2.8	3.3	2.9	2.2	2.3	2.2
相対粘度	←	3.51	←	←	←	←	←	3.3
原糸破断強度	cN/dtex	5.8	←	←	←	6.7	6.2	4.7
破断伸度	%	50	←	←	←	44.4	46.0	46
ST10	cN/dtex	2.1	←	←	←	2.4	2.7	2.9
生機経密度	本/2.54cm	183	182	183	←	201	129	222
生機緯密度	本/2.54cm	178	178	178	←	111	115	211
製品経密度	本/2.54cm	198	196	198	←	219	145	246
製品緯密度	本/2.54cm	184	184	184	←	119	124	228
組織図	←	図1	図2	図1	←	←	←	←

[0046]

[Effect of the Invention]

According to this invention, even if thin, it passed and the direction and the latitudinal direction were excellent in tear strength, and aesthetic property was also dramatically soft and made it possible to provide the textiles of low permeability in which the glossy sense was pressed down.

[Brief Description of the Drawings]

[Drawing 1] It is an organization chart showing an example of the textile construction of the textiles of this invention.

[Drawing 2] It is an organization chart showing other examples of the textile construction of the textiles of this invention.

[Translation done.]